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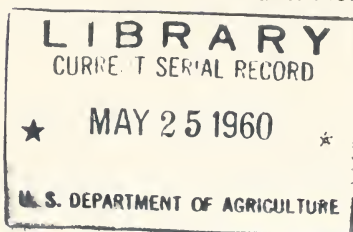
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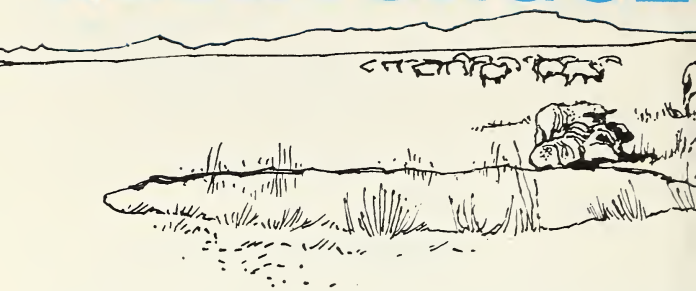
BLUETONGUE OF SHEEP



7 U. S. DEPARTMENT OF AGRICULTURE

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BLUETONGUE



Bluetongue, a seasonal disease of sheep, is caused by a virus. The disease is native to South Africa, but has spread to the United States and countries in the Mediterranean Sea area. The name describes the characteristic discoloring of the tongue that occurs in some severely infected sheep. Animals with mild forms of bluetongue seldom develop this symptom.

An infected animal may become weak and emaciated. It may have a swollen muzzle, inflamed, raw areas in the mouth and nose, and high fever.

Bluetongue first was found in the United States in 1948. During the next 12 years, it occurred in Arizona, California, Colorado, Idaho, Kansas, Missouri, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Texas, and Utah.

In the United States, death losses range from 1 to 30 percent of infected sheep. Yearlings are often affected; however, sheep of all ages and all breeds are susceptible.

In northern areas, bluetongue season extends from midsummer until killing frosts. In mild climates, bluetongue may occur at any time of year.

Spread—Bluetongue is not contagious; it does not spread by contact between infected and susceptible sheep.

The virus must get into a sheep's bloodstream before bluetongue can occur. A susceptible sheep can be expected to develop the disease within 7 to 10 days after the virus is introduced.

Scientists believe that the disease may be transmitted by blood-sucking or biting insects—probably certain species of *Culicoides*.

Culicoides are flies, but they are more commonly known as gnats, sandflies, sand fleas, midges, punkies, and no-see-ums. Adult gnats are about the size of a

OF SHEEP



pinhead. They are particularly active at twilight and dawn.

These gnats breed in mud. Larvae—or young—live and grow in wet soil around stock-watering tanks or ponds, septic tank drainage areas, and standing water. Usually, adult gnats are found in the vicinity of their breeding places, but they may be windblown to more distant areas.

Mosquitoes also are suspected of transmitting bluetongue. Usually, they breed in standing water.

Foreign scientists have reported bluetongue among cattle. These animals ordinarily do not show symptoms, but they can harbor the virus in their blood for several weeks. Whether cattle are involved in the natural spread of bluetongue is not known.

Symptoms—Not all signs of bluetongue appear in a single sheep or even in a single outbreak.

Usually, the first symptoms are a twitching of the lips, drooling, a watery nasal discharge, and a high fever.

As the disease progresses, a swelling of the lips, ears, and throat region frequently occurs. The skin over the face, ears, throat, and flanks—especially of whitefaced sheep—becomes red. Sometimes the skin over the entire body reddens. Linings of the mouth and nose first appear intensely red, but gradually change to a bluish red. Sloughing off of small areas leaves raw, bleeding surfaces in the lining of the mouth, on the tongue, margin of the lips, at corners of the mouth, and in the nose. The tongue may swell, become bluish red, and protrude from the mouth. Often, breathing becomes difficult. When the nasal discharge dries, it forms a crust on the nose and upper lip. Removal of this crust exposes a bleeding surface.

Some affected sheep have little or no appetite and become gaunt and listless. They lose weight rapidly and show pronounced muscular weakness. Shedding of tufts or patches of wool and breaks in wool fibers are not uncommon.

Some sheep with bluetongue become lame. Often, the coronary band—sensitive skin margin from which the horn of the hoof grows—becomes in-

flamed. A distinct red stripe $\frac{1}{8}$ - to $\frac{1}{4}$ -inch wide appears along the coronary band; then multiple narrow red stripes appear in the bulb area of the heel. The red color gradually changes to a deep bluish red and usually disappears within 2 months. Redness of the skin and swelling may occur in the pastern, or ankle, region. Some affected sheep will stand or walk on their knees to relieve the pressure on their feet.

Exertion from being driven, heat, and sunlight increase the severity of the disease and the death loss. Most deaths occur within 10 days after symptoms of bluetongue appear.



SN-241

Swollen lips and ears; inflamed muzzle.



TN-173

Sloughing off of skin and bleeding at margin of lips.

As a rule, sheep with bluetongue recover naturally within 14 days, but sheep that appear to be severely affected recover more slowly. Recovered animals may have live-bluetongue virus in their blood and body fluids for several weeks.

If any of your sheep show the symptoms of bluetongue, call your local or State veterinarian. Many serious diseases—including foot-and-mouth disease, contagious ecthyma (sore mouth), founder, and photosensitization (big head)—may be confused with bluetongue.

Bluetongue can be accurately diagnosed through laboratory tests.



SN-242

Nasal discharge and inflamed inner surfaces of lips.



SN-243

Ulcers and bleeding of dental pad and lower lip.

Care of Infected Sheep—No satisfactory medical treatment has been found for animals with bluetongue, but good care may reduce the severity and length of the disease.

Infected sheep should not be roughly handled or driven. On hot days keep them cool and in shade, if possible, because heat and sun aggravate the condition.

The severely affected sheep should be isolated and fed small amounts of soft food. Fresh water should be readily available at all times. If practical, wash the mouth and muzzle of each animal twice a day with a weak solution of boric acid.

Individual care is impractical when several animals are infected.

An eradication program involving slaughter of infected animals was not successful in South Africa. Other control measures—including dipping and spraying sheep—did not eradicate bluetongue.



SN-244

Swollen, bluish-red tongue gives disease its name.

Vaccination—Vaccination of healthy sheep with bluetongue vaccine will protect them against the disease. Where bluetongue exists in an area, the veterinarian may recommend annual vaccination of the entire flock.

When possible, ewes should be vaccinated at least 1 month before breeding. Bluetongue vaccine should not be given to pregnant ewes, particularly during the first 60 days of pregnancy. Lambs suckling immune ewes should not be vaccinated until they are 3 or 4 months old. Other sheep should be

vaccinated at least 1 month before the anticipated bluetongue season in the area.

A severe reaction may result after the vaccination of diseased, parasitized, or malnourished sheep.

The vaccination of sheep during an outbreak of bluetongue in the flock will arrest the development of new cases in about 14 days.

Insect Control—Controlling *Culicoides* gnats and mosquitoes may lessen outbreaks of bluetongue.

To reduce the number of these insects that breed in the area, take the following control measures—

- Drain or fill stagnant water holes and low areas where water stands.
- Dry up wet areas around watering tanks.
- Discharge septic tank drainage underground.
- Do not let manure accumulate on wet soil.

Where drainage and filling of breeding areas are impractical—

- Destroy gnat larvae by applying dieldrin or heptachlor at a rate of 1 pound of actual insecticide per acre of breeding area. Apply with caution; do not contaminate drinking water of livestock or humans.
- Control mosquito larvae by applying DDT, heptachlor, lindane, or dieldrin to water or wet areas at a rate of 0.1 to 0.2 pound of actual insecticide per acre.

Caution: Do not use these insecticides in places that sheep or other animals graze or trail over.



Coronary bands—above hoofs—very red and inflamed.

SN-245

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Animal Disease and Parasite Research Division,
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